Final

Environmental Assessment

for the Schweitzer Dam Removal Project

Washington County, Wisconsin

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1. Purpose and Need

1.1 Introduction

This document serves as the Environmental Assessment (EA) for a project that considers a variety of management alternatives for a dam and resulting impoundment, generally owned by the Wisconsin Department of Natural Resources (Department) on Cedar Creek, Town of Polk, Washington County, Wisconsin. The purpose of an EA is to disclose, explain, and evaluate the environmental effects of a proposed government action to the decision-makers and the public. The EA describes and evaluates alternatives to the proposed course of action. The draft EA was circulated for public review and comment between July 3 and August 3, 2002 and to ensure public participation in the process. This document, the final EA, includes information obtained and comments made during the public comment period.

Given the current state of the surface water resources effected by the Schweitzer dam and resulting impoundment, this document considers several alternatives for management of the Schweitzer Dam, its impoundment, and Cedar Creek.

The project is proposing to be partially funded by Federal Sport Fish Restoration Funds that are administered by the U.S. Fish and Wildlife Service and the Department of Natural Resources. Because of the funding source, the project must comply with both the National Environmental Policy Act (NEPA) and the Wisconsin Environmental Policy Act (WEPA) including Chapter NR 150, of the Wisconsin Administrative Code and the National Environmental Policy Act (NEPA) consistent with Part 1500 of the Code of Federal Regulations. This EA has been prepared to meet both Federal and State laws that require full public disclosure of projects that may affect the quality of the human environment.

1.2 Purpose for the Proposed Action

The primary goal of this project is to evaluate various management alternatives with a common goal to improve the ecosystem of the Cedar Creek Watershed by improving water quality, restoring habitat for native species, and enabling fish migration.

1.3 Need for the Proposed Action

The needs that should be met by the selected Alternative are:

1. Provide for fish passage along the upper reaches of Cedar Creek,

2. Restore the original thermal regime and habitat found in Cedar Creek which supported native cool and cold water species while reducing habitat for non-native warm water species (e.g. common carp and Eurasian watermilfoil),

3. Enhance the diversity and extent of wetland and upland plant communities (e.g. calcareous fen),

4. Minimize the liabilities associated with owning and maintaining a dam, and

5. Ensure that the private riparian landowner has a water source for continued operation of his residential heat pump.

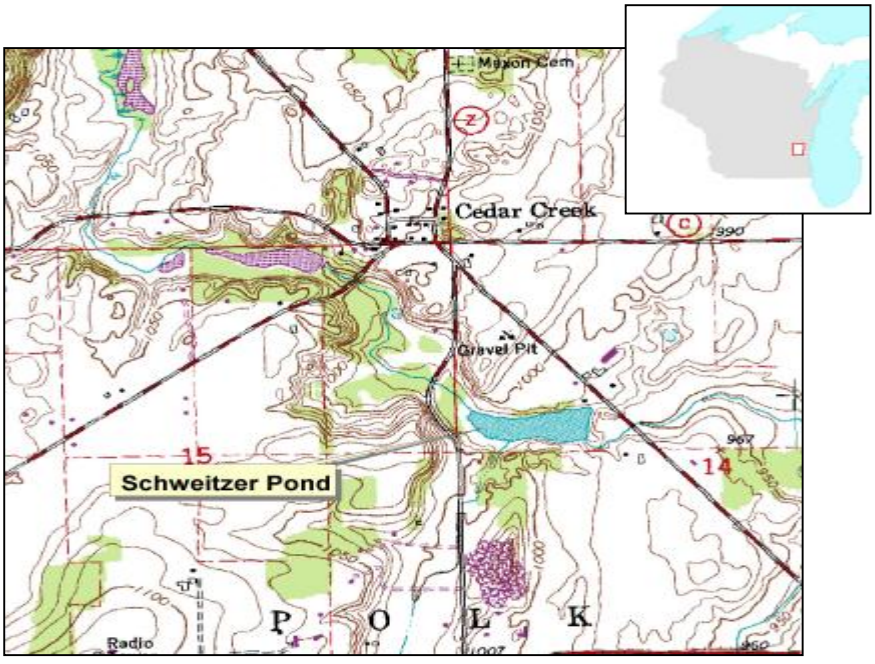
1.4 Background

The project is located in the Cedar Creek Watershed, Milwaukee River Basin, Washington County, Wisconsin. The entire Cedar Creek Watershed encompasses 126 square miles of drainage. Cedar Creek flows approximately 30 miles from its origin at the outlet of Little Cedar Lake to the Milwaukee River east of Cedarburg. While agriculture remains the dominant land use in the watershed, Washington County is one of the fastest developing counties in the State of Wisconsin.

The immediate project area is located in the southwest quarter of the northwest quarter of Section 14, Township 10 N., Range 19 East, Town of Polk. It is bounded by Lily Road on the downstream side of the project area and Cedar Creek Road on the upstream side of the project area. It is in the uppermost reaches of the Cedar Creek Watershed draining approximately 16 square miles, or 13% of the total watershed drainage area. Besides Cedar Creek, the project area also includes the Schweitzer dam, the 9.75 acre Schweitzer impoundment and its attendant dam and earthen berm.

A. Schweitzer and Joseph Merkel built the existing dam in 1946, possibly for the purpose of raising fish in the approximate 10-acre pond formed by the dam. There is no record that fish were raised here and the dam and resulting impoundment never served any purpose than forming the shallow pond. The Schweitzer Dam is the last authorized dam along the middle and upper reaches of Cedar Creek. There were five other dams along a 2.5 mile reach of upper Cedar Creek and these structures were formally abandoned or informally breached prior to 1963 (WCD, 1963). The Schweitzer Dam is the last dam and fish migration barrier along 25 miles of free-flowing Cedar Creek, extending from the Cedarburg Pond dam in Cedarburg upstream to the headwaters of Cedar Creek at the Little Cedar Lake outlet.

The dam and entire impoundment shoreline was held as private property until the dam and portions of the shoreline and surrounding uplands were purchased by the Department. The Department currently owns 18.5 acres of property in the project area. The property includes the entire 9.75 acre Schweitzer Pond, the concrete dam structure and earthen embankment, and 8.75 acres of surrounding wetlands and uplands. The property was purchased to preserve some outstanding river corridor features, including a regionally rare wetland community type, a 0.3-acre calcareous fen, and to protect water quality. The Department purchased this property from Ben and Mary Jo Pencikowski. The Pencikowski's retained their residence in addition to 5 acres of upland as required by local zoning. In addition, the Pencikowski's use the existing pond as cooling water to operate a small residential heat pump system.



The existing dam and impoundment limits the water based biological and recreational use potential of Cedar Creek. The existing dam prevents migration of fish and the resulting impoundment is shallow and infested with non-native and nuisance amounts of Eurasian watermilfoil, *Myriophyllum spicatum*. Eurasian watermilfoil covers greater than 90% of the pond surface during the peak summer growing and recreating period. The deep muck and dense Eurasian watermilfoil beds make swimming and wading difficult and uninviting. Sedimentation has reduced the effective water depth of the impoundment to less than 6 feet. While game fish

and pan fish populations are present, common carp are the dominant fishery comprising 78% of the measured fish community biomass.

The impoundment is also responsible for elevating maximum daily mean summer water temperatures from 0.5 ^{o}C to 4.1 ^{o}C above upstream conditions, and averaged 1.7 ^{o}C above upstream water temperatures. Previous records indicate the presence of brook trout, *Salvelinus fontinalis* and brown trout, *Salmo trutta* in the upper Cedar Creek watershed as recently as 1976 in Cedar Creek, and 1987 in Lehner Creek and Polk Springs two principal tributaries of Cedar Creek (Fago, 1984; Bozek and Wakeman, 1986). Recent and extensive use of conservation easements and land acquisitions along streams, installation of agricultural best-management practices such as buffers, and dam removals may allow restoration of these cold water fish and other aquatic life species.

1.5 Decisions That Need to Be Made

To meet WEPA requirements, the EA evaluates probable environmental effects of the various feasible alternatives associated with this project. Based on the findings contained in the EA, state and federal personnel will decide if there is a need to complete a more thorough Environmental Impact Statement (EIS) consistent with the WEPA.

Upon completion and public review of the EA, the Services Regional Director (Region 3, USFWS) will select one of the alternatives analyzed in detail and will determine, based on the facts and recommendations contained herein, whether this EA is adequate to support a Finding of No Significant Impact (FONSI) decision, or whether an EIS will need to be prepared.

2. Alternatives, Including the Proposed Action

A summary of the various alternatives, associated activities and summary of their ability to meet the projects purpose and need, as described in section 1.2 and 1.3, are described below and are presented in Tables 1a and 1b.

2.1 Alternatives Not Considered for Detailed Analysis

Besides the alternatives carried over for more detailed analysis, there were three alternatives that were excluded from detailed analysis. All of these later alternatives proposed to maintain the existing dam structure and impoundment.

Maintain Dam with Partial Drawdown

First, the option of letting the structure remain in place and simply lowering the gates to enable the river to flow freely through the structure was considered. Leaving the dam in place and allowing the water to flow through the gates would lower water surface elevations in the pond by only 3.5 feet. A 4 to 6-foot spillway would remain making fish passage impossible. Extending the residential cooling tubes into deeper water might allow continued use of the remaining pond to operate the residential heat pump system. Although water retention times in the pond would decrease, water temperatures would still be excessive for the maintenance of a cool or cold water fish and aquatic life community. Habitat would remain preferable for common carp and other fish and aquatic life species more tolerant of degraded environmental conditions. Water depths would decrease to an average of 2.2 feet and the nuisance growth of Eurasian watermilfoil and algae would persist. The safety and liability issues associated with operating and maintaining a dam would remain, with actual costs for operation expected to increase slightly.

Maintain Dam with Seasonal Drawdown

Another alternative not considered for detailed analysis was allowing for the passage of fish at certain times of the year by opening the gates at certain periods that coincided with the annual spring spawning runs of specific species. Removal of all stop logs from the dam structure still leaves a 4 to 6-foot change in water surface elevation between upstream and downstream levels making fish passage impossible. This alternative would permit continued use of the remaining pond to operate the residential heat pump system during the summer

cooling season only (June through September). Summer water retention times in the pond would be unchanged and would be excessive for the maintenance of a cool or cold water fish and aquatic life community. Habitat would remain preferable for common carp and other fish and aquatic life species more tolerant of degraded environmental conditions. Seasonal water depths would decrease an average of 2.2 feet. This condition would desiccate normally submerged near shore areas where most of the resident fish population spawning and nursery cover exists. Nuisance growth of Eurasian watermilfoil and algae would persist and seasonal water level fluctuations would encourage invasive vegetation at the expense of native wetland communities. The safety and liability issues associated with operating and maintaining a dam would remain, with actual costs for operation expected to increase slightly.

Maintain Dam with Fish Passage

The third alternative not carried forward for detailed analysis would involve the continued operation of the existing dam, and construction and operation of a passive or active fish passage structure. The Department would incur additional long-term operation and maintenance costs for a fish passage structure. The fish passage structure could not be designed so to guarantee use and passage by all native fish present in the project area. The site constraints would make construction difficult and expensive and would likely require stream channel realignment and possible relocation. Under this alternative, the residential heat pump system would be unaffected. The remaining impacts and benefits of this alternative would be similar to the previous alternatives. Habitat would remain preferable for common carp and other fish and aquatic life species more tolerant of degraded environmental conditions. Under this alternative, water temperatures within the impoundment and downstream of the dam would exceed water temperatures measured upstream of the impoundment in free-flowing reaches of Cedar Creek, and in excess of levels needed to maintain a cool or cold water fish and aquatic life community.

To summarize, these three alternatives were rejected from further consideration because they would not partially or fully meet the purpose and needs proposed for this project. The Department would continue to incur the liabilities attendant to maintaining and operating a dam. A significant portion of the dam structure would remain and would still represent a complete barrier to fish passage. The dam and resulting impoundment would continue to maintain a shallow and warm pool of water dominated by heavy submerged plant growth and generally poor aquatic habitat quality. Water temperatures within the pond and downstream of the dam would continue to exceed the 22 ^{0}C Maximum Daily Mean (MDM) criteria for a cool or cold water fish and aquatic life community which currently exists upstream of the impoundment. In all of the alternatives described above, the pond is too shallow and detention times too short to allow for a stratified thermal regime and potential cold water discharge. Eurasian watermilfoil would persist and carp would remain the dominant fishery. Both would proliferate and would remain a continuing source for downstream reaches. The opportunity to enhance the diversity of wetland and terrestrial plant communities, including a rare calcareous fen, would not exist.

2.2 Alternatives Carried Forward for Detailed Analysis

2.2.1 Alternative A (Proposed Action) – Remove Dam, Restore the Creek Channel and Create an Off-Line Replacement Pond

The preferred alternative includes removing the Schweitzer Dam, restoring and enhancing habitat in the newly formed river channel and exposed sediment, and restoring the riparian landowners ability to use the pond water for cooling purposes by creating a small (< 0.25 acre) pond adjoining his property but removed from Cedar Creek. The pond would be constructed with shallow water shelves and planted with native plants to encourage wildlife. Once completed, the private landowner would be responsible for maintenance of the replacement pond.

If selected, this project would be undertaken in four phases. Phase I involves controlled draw down of the impoundment and temporary seeding of exposed sediment. Phase II includes removal of the dam structure and partial removal of the associated earthen berm. Phase III involves short-term stabilization and creation of a replacement cooling and wildlife pond. Phase IV includes long-term stabilization and restoration of the former impoundment including re-vegetation of exposed sediment, and streambank and channel protection using engineered and bioengineered practices as appropriate.

Phase I - Site Access and Draw Down

Site access will be gained by using an existing "road" along the top of the approximately 300-foot long berm to the north of the concrete dam structure. Minimal improvements to the berm-top road will be needed for travel by light machinery (e.g. pick-up trucks). Some limited cutting of trees and shrubs may be required to improve access. The majority of these plants are box elder. Additional gravel may be brought in to widen the berm-top road in subsequent phases of the project so that larger tracked equipment (e.g. backhoe) may access the site.

In addition, an unimproved access road to the south of the dam structure may be constructed. The road would cover up to 600 lineal feet of agricultural upland. The road would require a temporary easement from an adjoining property owner. At the end of the roadway, equipment would have to traverse a 2 on 1 slope to access the dam structure from the south. This would require the removal of a dozen or less tree consisting of box elder and black willow, some woody shrub, and lesser numbers of cottonwood, silver maple, and basswood.

The first task was completed in July 2001 and involved the removal of boards from the dam structure. This resulted in a surface water drop of approximately 2 feet. This task was completed to expose a portion of the shoreline to assess the native seed bank content, assess the water budget to the calcareous fen, and to locate the potential free-flowing channel following removal of the dam.

If this alternative is chosen, a concrete-cutting chain saw will be used to progressively cut notches into the concrete dam structure. Each notch will remove up to a 4-foot by 2-foot by 1-foot (1/4 cubic yard) section of dam structure, allowing the drawdown of the former impoundment to progress at a controlled rate. Concrete debris generated in this phase will be allowed to fall to the downstream side of the structure onto the concrete slab spillway, and will be removed along with the rest of the structure in subsequent phases of work. As soon as possible after the initial drawdown, Department staff will seed the exposed sediment with a nurse crop of Canada wild rye or annual rye to re-vegetate and stabilize exposed sediments. The purpose for establishing the nurse crop is to control erosion and encourage de-watering of the exposed sediment while not out competing beneficial native vegetation in the sediment seed bank.

Phase II - Removal of Dam Structure; Re-grading of Earthen Dike

Dam Structure Removal. Once the draw down is complete, the remaining dam structure will be removed. There are several methods for dam removal that may be employed at this site. The most likely method will be to use an excavator-mounted concrete breaker, along with an oxyacetylene torch to cut rebar. Another, more labor-intensive method may be to use a concrete-cutting chainsaw to cut the structure into manageable pieces for removal.

Wherever possible demolition activity will be conducted from the banks of the river or the dry impoundment. Some of the demolition of the tailrace and dam will have to be conducted in the waterway. Where work must be conducted in the river the effects of turbidity will be controlled using modified turbidity barriers. The scour hole below the dam will also be maintained and used as a sediment trap. The demolition of the dam will begin in the center of the dam, equidistant from both riverbanks. Demolition work will be conducted progressively, moving back toward both riverbanks. Demolition of the tailrace will be conducted as the last step in the demolition activity. Concrete rubble and rebar will be removed and disposed off site in an approved demolition waste landfill. Rebar free concrete may be reused as a base for areas to be treated with rip rap.

Northern Earthen Berm Re-grading. The earthen berm to the north of the former dam structure will be re-graded at a 4H:1V slope, from a spot 10 feet north of the creek bottom to the top of the berm. The purpose of this re-grading is to ensure that there is adequate flood-flow capacity through this formerly constricted area, and to minimize the potential for scour along the northern creek bank.

The estimated volume of material to be re-graded is about 500 yd^3. Re-grading to the north of the former dam structure will entail about 60 lineal feet of disturbance horizontally along the existing earthen berm. The disturbance path may be up to 100 feet wide, for a total possible impacted area of 6,000 square feet. The trees and shrubs along this stretch of berm will be removed, and include black willow and box elder.

Southern Earthen Berm Re-grading. The earthen berm to the south of the former dam structure will be re-graded at a 3H:1V slope, from a spot 5 feet south of the creek bottom to the top of the berm. As with grading along the northern section of the berm, this re-grading is proposed to ensure adequate flood-flow capacity, and to minimize the potential for scour along the southern creek bank.

The estimated volume of material to be re-graded is about 350 yd^3. Re-grading to the north of the former dam structure will entail about 45 lineal feet of disturbance horizontally along the existing earthen berm. The disturbance path may be up to 100 feet wide, for a total possible impacted area of 4,500 square feet. The trees and shrubs along this stretch of berm will be removed, and include black willow, box elder and silver maple. Some of this woody vegetation would have been removed during earlier construction of the southern site access road.

Phase III – Creation of Off-Line Replacement Pond

The actual design of the pond will be performed in cooperation with the design professionals hired by the owner of the affected heat pump system. Construction of the pond will likely be conducted after the dam has been removed, and after the mudflats have had sufficient time to stabilize (3-6 months).

The pond design may vary, but the maximum dimensions are known. The maximum surface area of the pond is about 0.25 acres. The maximum water depth will be between 12 and 15 feet. The maximum amount of material that will be excavated to create the pond will be about 2,000 cubic yards of floodplain soils. The pond may include low sloping submerged shelves to encourage plant diversity and wildlife cover. Excavated soils will be managed on-site and will not negatively impact listed, proposed or candidate species.

Based on the historic air photos, it appears that the likely stream plan form will establish itself 50 m (164 feet) from the edge of the proposed pond. As such, the pond will not affect the hydrology or morphology of Ced ar Creek.

Phase IV – Long-Term Site Stabilization and Restoration (4-60 months after dam removal)

We do not know for certain what the stream planform will look like following dam removal. Therefore, we are proposing to give the stream at least a year in which to "find its way" before we attempt any streambank restoration or stabilization.

About a year after dam removal, we will conduct a channel assessment, noting physical dimensions, surveying boundaries, and recording the measures of bank and bottom channel stability. Following this streambank conditions survey, we will design and install bank protection, toe protection, and grade control structures only as necessary to prevent excessive sediment loss and continuing channel instability. We will prefer to rely on the local exposed sediment seed bank to provide the basis for a long-term plant management program. In the event that additional intervention is needed to increase plant diversity and densities dependent on site conditions, or control nuisance plants, native grass species and varieties will be added to areas as appropriate. Depending on availability, bare root woody shrubs may be planted as soon as possible after the drawdown. A short-list of potential plant species is provided in Appendix 1. The final seed selection will depend on local soil conditions and the availability of preferred plant species already present in the seed bank.

Erosion and Sediment Control. All phases of construction site erosion will be mitigated according to the Wisconsin Best Management Practices Handbook. Site characteristics, such as gradient and direction of slopes, overland flow, and the location of paved areas and buildings near the site, will be considered. Best Management Practices (BMP's) for erosion control will be undertaken in accordance with Wisconsin Administrative Code NR 216 and local ordinances. These will include, but may not be limited to placement and maintenance of filter fabric fence, straw bales, and vegetative strips in appropriate locations. Emphasis will be placed on retaining any soil storage piles and ensuring the stream bank remains as stable as possible. Silt fence will be the main method used to control sediment runoff into the river. Silt fences will be placed along the stream bank, with an additional silt fence along the down slope side of the access roads.

A summary of the various jurisdictional authorities, and required review and approvals for the proposed Alternative A is available in Appendix 2.

2.2.2 Alternative B (No Action) – Repair and Operate Dam

The "no action" alternative includes keeping the dam and impoundment in place as is. An informal inspection of the Schweitzer Dam was completed in June 2001. The inspection indicated that the dam and attendant dam infrastructure were in generally good condition. Some concrete spalding was noted along the spillway and abutments. If this alternative is selected, the Department will be required to repair and maintain the dam. Pursuing this "no action" alternative would create a long-term financial liability for the Department.

2.2.3 Alternative C – Repair and Operate Dam, and Enhance Impoundment by Dredging

In cooperation with the USFWS, the Department gathered information and requested public comments on the proposed dam removal alternative prior to finalizing this EA (Appendix 7 and 8). While no formal comments were received, the Department received a voice mail message from a resident of the area suggesting that the Department maintain the existing dam structure and pool of water formed by the dam. In addition, the individual suggested that dredging the impoundment could enhance the impoundment fishery and reduce the "weed" growth. The Department agreed to carry this alternative forward.

For planning purposes, this alternative assumed that the pond would be hydraulically dredged to a depth of 11 feet (50,000 cu.yds). To discourage an unsafe sudden drop for waders, a minimum 3:1 slope would be excavated along the entire pond shoreline. Although it was recognized that the 11-foot dredge depth would not be entirely effective in reducing nuisance growth of Eurasian watermilfoil, dredging beyond 11 feet would place the bottom elevation of the pond below the dam spillway. Dredging below the 11-foot spillway elevation would prohibit the ability to cause a full drawdown without the benefit of mechanical pumping or siphoning. Why technically feasible, dredging the pond would increase operation and maintenance costs considerably.

The dam would be maintained in its current condition and would be operated in a "run of the river" mode. Run of the river infers that the discharge over the dam would be equal to water entering the impoundment by surface water drainage and groundwater seepage with no deviation of discharge through dam gate manipulation. In essence, the minimum water elevations and resulting depth within the pond would be set by the elevation of the dam spillway.

Similar to Alternative A, this alternative would be undertaken in phases. Phase I would involve all of the detailed planning for the project, developing site access to the impoundment, locating and constructing a dredge spoil disposal site, and the carriage return water treatment and disposal infrastructure, as appropriate. Phase II would involve mobilization, assembly and deployment of the hydraulic dredge and dredge spoil pumping system. Phase III would involve the dredging, pumping and disposal of dredge spoils, treatment and disposal of carriage return water. Phase IV would include disassembly and de-mobilization of all of the dredge apparatus and dredge spoil piping system, and management of the dredge spoil disposal area by de-watering, grading and vegetation planting as appropriate.

Phase I – Planning, Site Access, Locating and Constructing Dredge Spoil Disposal Site

Similar to Alternative A, site access would be gained by using an existing "road" along the top of the approximately 300-foot long berm to the north of the concrete dam structure. Minimal improvements to the berm-top road will be needed for travel by light machinery (e.g. pick-up and flatbed trucks). Some limited cutting of trees and shrubs may be required to improve access. The majority of these plants are box elder.

If this alternative were chosen additional lands would need to be acquired, through fee and title or construction easement, to construct a sediment disposal and carriage water treatment facility. The existing state land surrounding the project area is narrow and steep. As such, a neighboring land site would be needed. Once acquired, the disposal site would need to be engineered ands constructed to accept, confine and de-water up to

50,000 cu. yds of dredge spoils and associated return water. No natural depressions large enough to accept this volume of dredge spoil exist in the area so it is likely the site would require some excavation and construction of berms. A forebay may be included to trap coarse particle (e.g. sand) and other large debris. Sizing of the sediment confinement area will depend on sediment volumes and water content, infiltration rates, loading rates, particle size, surface areas and estimated evaporation rates, topography, desired carriage return water quality, and other variables. This phase is estimated to take at least one year 1-year to complete assuming a suitable disposal site could be located and acquired in very close proximity to the project area. Similar to Alternative A, this alternative would require the state to apply for and receive a variety of permits from local and state agencies, depending on the specific activity (e.g. dredging, grading and discharge of carriage water).

Phase II - Mobilization, Assembly and Deployment of Dredge and Dredge Spoil Pumping System

This phase would involve transport and assembly of the dredge system and supporting infrastructure including but not limited to the barge, cutting head, power system for dredge and pump, and piping for transport of the dredge spoils to the upland disposal site. This phase is estimated to take at least one year 1-month to complete.

Phase III – Dredging, Pumping and Disposal of Dredge Spoils, Treatment and Disposal of Carriage Water

This phase involves the actual dredging, transport and disposal of the dredge spoils, as well as the removal, treatment and discharge of the water extracted from the dredge spoils at the disposal site. The dredging and transport of the sediment is relatively simple. However, once placed in the confined disposal area, removing and treating the water before being discharged to surface or groundwater becomes more difficult. In many respects, the sizing of the disposal area will be governed by the amount of water generated by the dredging operation. In all likelihood, the carriage return water will need to be monitored to insure that it will not negatively impact surface water or groundwater quality. This phase of the project is expected to take from 4 to 6 weeks.

Phase IV – De-mobilization of Dredge Apparatus and Dredge Spoil Management

This phase of the project includes disassembly and de-mobilization of the dredge and piping. Once the disposal site is adequately de-watered, it would likely be graded and seeded with a temporary or final native seed mix. To the extent possible, the disposal site will be restored to its former land use and cover.

Erosion and Sediment Control. All phases of construction site erosion will be mitigated according to the Wisconsin Best Management Practices Handbook. Site characteristics, such as gradient and direction of slopes, overland flow, and the location of paved areas and buildings near the site, will be considered. Best Management Practices (BMP's) for erosion control will be undertaken in accordance with Wisconsin Administrative Code NR 216 and local ordinances.

Table 1a Summary of Management Alternatives Not Considered for Detailed Analysis

Alternatives	**Activity**	**Comments**
Maintain Dam with Partial Drawdown	Permanently open dam spillway gates. Surface water elevation of pond would decrease by 2.2 ft.	Would not partially or fully meet project purpose and needs for removing fish migration barrier, enhanced habitat for native species at the expense of non-native species, enhanced diversity of wetland and upland communities, remove dam ownership liabilities. Would allow continued operation & value of residential HVAC system (see section 1.2-1.3).
Maintain Dam with Seasonal Drawdown	Seasonally open dam spillway gates and lower elevation of pond surface by 2.2 ft. during target fish species migratory spawning runs, typically spring of the year. Following this period, close dam gates and return pond to full pool.	Would not partially or fully meet project purpose and needs for removing fish migration barrier, enhanced habitat for native species at the expense of non-native species, enhanced diversity of wetland and upland communities, remove dam ownership liabilities. Would allow continued operation & value of residential HVAC system (see section 1.2-1.3).
Maintain Dam and Construct Fish Passage Structure	Operate and maintain existing dam structure, construct and operate a fish passage facility.	Would partially meet project purpose and needs for removing fish migration barrier. Would not partially or fully meet project purpose and needs for enhanced habitat for native species at the expense of non-native species, enhanced diversity of wetland and upland communities, remove dam ownership liabilities. Would allow continued operation & value of residential HVAC system (see section 1.2-1.3).

Table 1b Summary of Management Alternatives Considered for Detailed Analysis

Alternatives	Activity	Comments
Alternative A (Proposed Action) – Remove Dam, Restore Creek Channel and Create an Off-Line Replacement Pond	Dam and attendant infrastructure would be formally abandoned and removed, stream channel re-constructed, resulting wetland and upland areas re-vegetated, and construct replacement pond for residential HVAC system.	Would fully meet project purpose and needs for removing fish migration barrier, enhanced habitat for native species at the expense of non-native species, enhanced diversity of wetland and upland communities, remove dam ownership liabilities. Would allow continued operation & value of residential HVAC system (see section 1.2-1.3).
Alternative B (No-Action) – Repair and Operate Dam	Operate and maintain existing dam structure.	Would not partially or fully meet project purpose and needs for removing fish migration barrier, enhanced habitat for native species at the expense of non-native species, enhanced diversity of wetland and upland communities, and remove dam ownership liabilities. Would allow continued operation & value of residential HVAC system (see section 1.2-1.3).
Alternative C – Repair and Operate Dam and Enhance Pond by Dredging	Operate and maintain existing dam structure, and dredge pond to an average depth of 11 ft.	Would partially meet project purpose and needs for enhancing habitat for native species at the expense of non-native species. Would not partially or fully meet project purpose and needs for removing fish migration barrier, enhanced diversity of wetland and upland communities, and remove dam ownership liabilities. Would allow continued operation & value of residential HVAC system (see section 1.2-1.3).

3 Affected Environment

3.1 Physical Environment

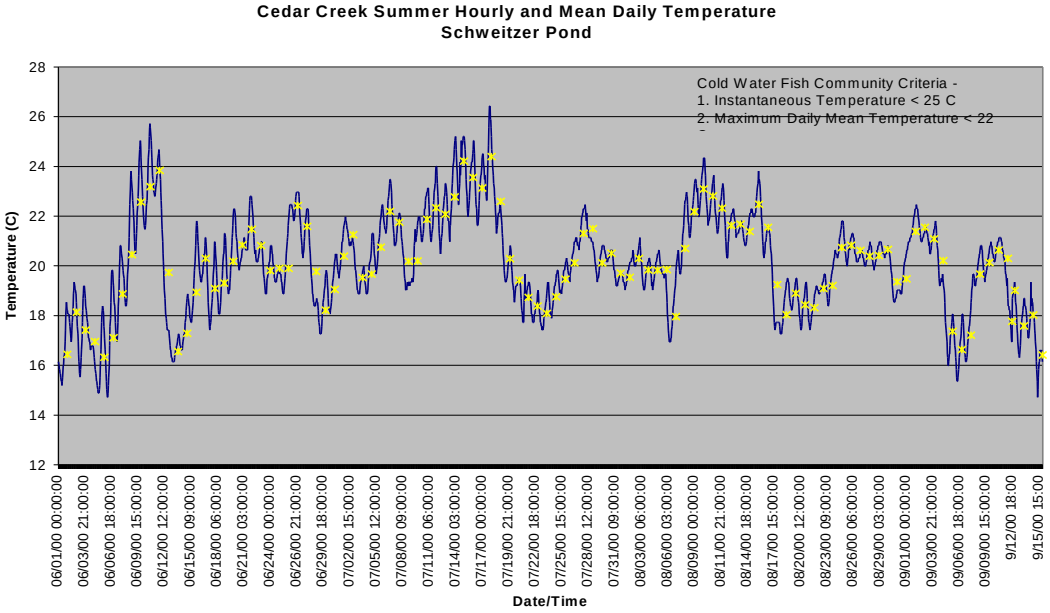
The Schweitzer impoundment covers an area of about 9.75 acres, and is formed by a 10-foot head concrete dam. It is approximately 1,200 feet in length with an average width of 325 feet. A. Schweitzer and Joe Merkel built the dam in 1946. Public Service Commission documents filed by Mr. Schweitzer show that he was interested in raising fish in the pond formed by his dam. Mr. Schweitzer apparently never raised fish in his pond, and the dam never served any purpose other than forming the shallow, 10-acre pond. The pond occupies the site of a much older dam and impoundment, the remnants of which can be seen downstream of the earthen berm adjacent to the dam. The records are not entirely clear but the original dam permit application states that "this is an old dam site, the original pond being about 16 acres, what remains of the dam backs up the water to cover 4 to 5 acres." Aerial photographs taken in 1941, prior to construction of the present dam structure, do not reveal any impounded acreage. The present dam structure includes a concrete dam and spillway, and a 300-foot long earthen dike. The concrete dam structure is approximately 10 feet tall and 20 feet across with a width that ranges between 6 and 10 feet.

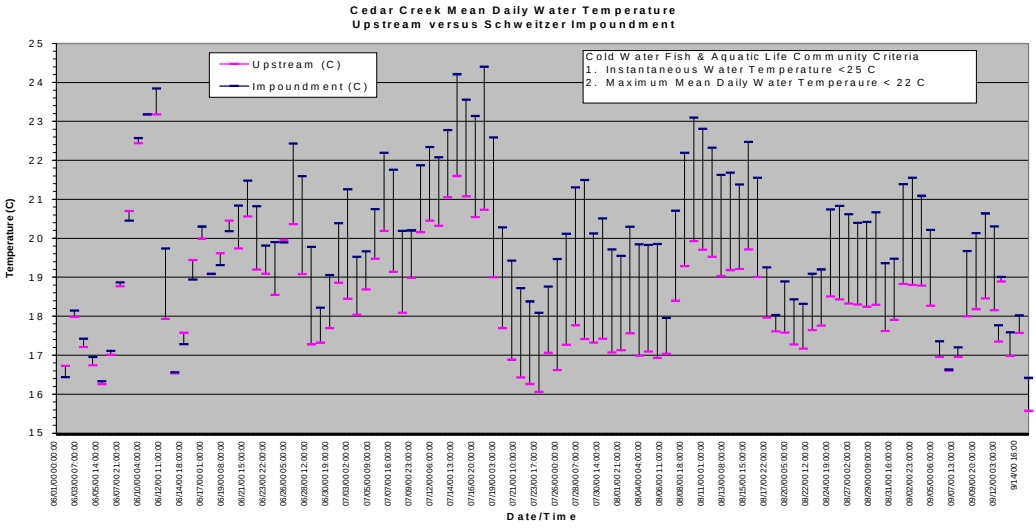
Cedar Creek Aerial photographs taken in 1941 prior to dam construction

Average water depth in the pond is about 5.7 feet, with a maximum water depth of about 8 feet. A layer of unconsolidated sediments overlying hardpan material exists in the pond, with an average sediment thickness of 1.8 feet, and a maximum observed sediment thickness of nearly 6 feet. These sediment deposits detract from full and partial body contact forms of recreation such as swimming and wading.

Although the dam and impoundment were never used for the intended purpose, the former dam owner and riparian continues to use the pond for cooling his residence with a closed loop heat pump and coil system. The cooling coils extend approximately 20 feet from the shoreline in approximately 3-4 feet of water.

Water temperatures within the Schweitzer Pond are elevated above upstream levels during the warm summer months. Schweitzer Pond summer (June through mid-September 2001) daily mean water temperatures were from 0.5 ^{o}C cooler to 4.1 ^{o}C warmer than water temperatures measured upstream of the pond. On average, Schweitzer Pond water temperatures were 1.7 ^{o}C warmer than water temperatures measured along free-flowing reaches just upstream of the pond. Summer daily mean water temperatures within and downstream of the Schweitzer dam and pond routinely exceed 22 ^{o}C and hourly water temperatures routinely exceed 25 ^{o}C. These trends suggest that the thermal impacts of the Schweitzer dam and pond may be limiting the establishment of a cool or cold water fish and aquatic life community (see figures below).





Runoff from the intensive agricultural land use practices and the construction of dams and impoundment's along the upper reaches of Cedar Creek are suspected of impacting historical trout populations. Beginning in late-1980, many of the most severe water quality problems from runoff have been abated. Buffers have been established through conservation easements or other mechanisms, and five historical dams have been abandoned or removed.

3.2 Biological Environment

Surface Water Resources. The impoundment supports a warm water fish and aquatic life community (Appendix 3). A total of 12 species of fish were collected during year 1999 and 2000 surveys. Common carp, *Cyprinus carpio* made up a large share of the fish community comprising 78% of the fish community biomass. Game fish include northern pike *Esox lucius,* and largemouth bass, *Micropterus dolomieu*. Panfish are dominated by bluegill, *Lepomis macrochirus,* with lesser numbers of green sunfish, *Lepomis cyanellus*, pumpkinseed, *Lepomis gibosus*, and black crappie, *Pomoxis nigromaculatus*. Based on a 1975 record, a single specimen of lake chubsucker, *Erimyzon sucetta,* was collected from the pond. This species is currently listed on the states Special Concern list. The lake chubsucker is present in other Cedar Creek Watershed waterbodies including Cedar Creek, the North Branch of Cedar Creek, Tilly Lake and Hasmer Lake all of which are located downstream of the Schweitzer impoundment (Fago, 1984). The lake chubsucker is also common in Big Cedar Lake and Little Cedar Lake located 3 miles upstream of Schweitzer pond (John Nelson, pers. com.). According to Becker (1983) and Lyons (2000), the lake chubsucker is uncommon to common in low-gradient streams and lakes in southeastern Wisconsin.

Rooted aquatic vegetation is very abundant at nuisance levels, covering all of the pond surface area during warm water periods. Non-native Eurasian watermilfoil is by far the most abundant macrophyte in the impoundment covering greater than 90% of the ponds surface during the summer growing season. This dense watermilfoil growth can make recreational boating and fishing more difficult. Lesser amounts of common waterweed, *Elodea canadensis*, Coontail, *Ceratophyllum demersum*, Fragrant water-lily, *Nymphaea odorata*, and non-native Curly-leaf pondweed, *Potamogeton crispus,* are also present. Emergent aquatic vegetation is present along the upper limits of the pond and shoreline. They include Broad-leaf cattail, *Typha latifolia,* and Softstem bullrush, *Scirpus validus*.

Schweitzer Pond and Dam - August 2000 Eurasian watermilfoil and filamentous algae

Cedar Creek upstream and downstream of the Schweitzer dam and pond currently support a warm water fish and aquatic life community. A combined 12 taxa of fish were collected from Cedar Creek upstream of the pond during 1999 and 2000. Creek chub, *Semotilus atromaculatus*, green sunfish, yellow bullhead, *Ameiurus natalis*, and horneyhead chub, *Nocomis biguttatus*, comprised 76% of the collected fish biomass. Young-of-the-year largemouth bass were the only sport fish captured. A combined 17 taxa of fish were collected from Cedar Creek downstream of the pond during 1999 and 2000 (Appendix 3). Common white sucker, *Catostomus commersoni*, creek chub, largemouth bass and horneyhead chub comprised 71% of the fish biomass.

Historical fish distribution records from 1976 and 1986 include brook trout or brown trout collections from the Lehner Lake outlet, Polk Springs and Cedar Creek. The collections were made from the same approximate drainage area in the upper Cedar Creek watershed known to have more active areas for groundwater discharge (Bozek and Wakeman, 1986; Fago, 1984).

Habitat upstream of the Schweitzer Pond is considered "good" for smaller bodied fish. The reach is made up of riffle and run complex and pools are generally absent. Deeper runs and small woody debris dams provide additional depth and cover. Average maximum depth in runs is 0.31 m and average depth for the reach is 0.16 m. Large cobble and coarse gravel are dominant substrate averaging 46% and 21%, respectively. Embeddedness is moderate but not excessive at 35%. Stream banks are stable with a minimal amount of mean bare soil. The corridor is undeveloped wetland and shading is 80%. Tamarack and wet deciduous forest are the dominant land use and the water surface is well shaded at 80%.

Cedar Creek upstream of the Schweitzer impoundment.

There are two distinct reach types immediately downstream of the Schweitzer Dam. The reach immediately downstream of the dam is unique to the upper reaches of Cedar Creek in that it has a high gradient. It is made up almost entirely of riffle with the exception of a short run located midway through the reach and a large and deep (1.5 m) scour pool formed immediately below the dam raceway. Cover is generally lacking with exception of some occasional woody debris. Average water depth for the reach is 0.14 m. Large cobble and coarse gravel are dominant substrate averaging 48% and 24%, respectively. Embeddedness is relatively low at 20%. Stream banks are stable with a minimal amount of mean bare soil. The corridor is undeveloped and dominated by wet deciduous forest. Stream shading from the dense tree canopy is high at 85%. Wet deciduous forest is the dominant land use and the water surface is well shaded at 80%.

Cedar Creek immediately downstream of the Schweitzer Dam and upstream of Lily Rd.

Downstream of the reach described above, Cedar Creek returns to a more typical moderate gradient stream type. Riffles are the dominant feature with lesser amounts of run and pools are absent. Cover is generally lacking with exception of some occasional boulder. Average water depth for the reach is 0.19 m and the maximum depth was 0.26 m. Large cobble and coarse gravel are dominant substrate averaging 31% and 37%, respectively. Embeddedness is relatively low at 22% and sands and silt-sized substrate comprise 24% of the bottom material. The corridor is undeveloped and dominated by wet meadow and lesser amounts of shrub carr with corridor widths well in excess of 10 m. Prior to 1990, livestock over grazed the corridor. The present sedge, grass and shrub root structure contributes to very stable bank conditions and a minimal amount of bare soil. Shading is minimal at 11%. The lack of shade and adequate nutrient supply contributes to extensive filamentous algae growth covering 70% of the stream bottom.

Cedar Creek downstream of Schweitzer Dam and Lily Road

Other Wildlife Resources. Wildlife (mammal) species observed in the vicinity of the Schweitzer Dam and impoundment include whitetail deer, muskrat, mink, raccoon, muskrat, gray and fox squirrel, chipmunk, and coyote. Bird species include robin, cardinal, warbler, chickadee, catbird, kingfisher, great blue heron, red-winged blackbird, flycatchers, Canadian geese, mallard ducks, wood ducks and marsh wrens.

Vegetation and Land Cover Resources. The Schweitzer Dam and impoundment are located in the Town of Polk. The land uses surrounding the impoundment include floodplain and upland deciduous forest, a 0.3 acre calcareous fen, a 0.5 acre southern sedge meadow (sedge fen), shallow marsh and pond, and one residential lot. With exception of the small residential lawn area adjacent to the impoundment, the corridor along the impoundment and Cedar Creek is undeveloped. The entire plant community has been identified by the Southeastern Wisconsin Regional Planning Commission (SEWRPC) as Class II, or good quality, wetland wildlife habitat area, and are located within a primary environmental corridor (SEWRPC, 2000).

Dominant tree species include green ash, *Fraxinus pennsylvanica*, american elm, *Ulmus americana L*., willow spp., *Salix* spp., cottonwood, *Populus deltoides*, box elder, *Acer negundo*, and tamarack, *Larix laricina.* Shrub types include common juniper, *Juniperus communis,* willow spp., *Salix* spp., young green ash, *Fraxinus pennsylvanica*, dogwood, and sumac. Herbaceous plants include Virginia wild *rye, Elymus virginicus*, redtop grass, *Agrostis stolonifera*, fen mulhy grass, *Muhlenbergia glomerata*, reed canary grass, *Phalaris arundinacea*, sterile sedge, *Carex sterilis*, sedge, *Carex granularis*, tussock sedge, *Carex stricta*, bottlebrush sedge, *Carex hystericina*, short-headed rush, *Juncus brachycephalus*, joint rush, *Juncus nodosus*, virginia blueflag, *Iris virginica*, scouring rush, *Equisetum hyemle*, blue vervain, *Verbena hastata*, great blue lobelia, *Lobelia siphilitica*, yarrow, *Achillea millefolium*, giant goldenrod, *Solidago gigantea*, grassleaf goldenrod, *Solidago graminifolia*, ohio goldenrod, *Solidago ohioensis* (state Special Concern), red-stemmed aster, *Aster puniceus*, swamp aster, *Aster lucidulus*, joe-pye weed, *Eupatorium maculatum*, and boneset, *Eupatorium perfoliatum*.

3.2.1 Listed, Proposed and Candidate Species

Based on a review of the Natural Heritage Inventory (NHI) Database and several surveys of the area there are no federal or state listed, proposed or candidate species located in the project area or that would otherwise be affected by any of the alternatives described in this EA.

The Ellipse mussel, *Venustaconcha ellipsiformis*, is located in Cedar Creek approximately 3-miles downstream of the project site. This mussel is listed as a State Threatened Species. None of the alternative management alternatives discussed in this would negatively impact this mussel.

There are two State Special Concern Species, the lake chubsucker and ohio goldenrod, *Solidago ohioensis,* located in or adjacent to the project area. A calcareous fen is located adjacent to the impoundment. This is a regionally rare wetland plant community identified as significant in the Natural Heritage Inventory (NHI) (Appendix 4). The impacts of the various alternatives on these later two species and associated community will be discussed for each alternative in Section 4 that follows.

3.2.2 Cultural and Paleontological Resources

The State Historic Protection Office (SHPO) and Tribal Historic Protection Office (THPO) have determined that the Schweitzer Dam and its associated complex does not have historic significance hence there would be no impact to any historical properties within the project area (Appendix 5 and 6).

3.2.3 Local Social/Economic Conditions

The 1997 population of Washington County was 110,629. The City of West Bend is the largest city in the county with a population of 28,100. It is located 5 miles north of the project area. Based on 2001 statistics, Washington County was one of the fastest growing residential county in the state. There are no prime agricultural lands in the vicinity of the dam or impoundment.

4 Environmental Consequences

4.1 Alternative A (Proposed Action) – Dam Removal, Restore the Creek Channel and Create Off-Line Replacement Pond

4.1.1 Biological Impacts

Removal of the Schweitzer Dam and resulting impoundment would eliminate the last barrier to fish migration in the upper Cedar Creek watershed and 25 miles of Cedar Creek. Genetic health and diversity of species that had fragmented populations because of the dams blocking fish movement will be improved.

The existing warm and eutrophic impoundment habitat that is more supportive of fish and aquatic life tolerant of degraded environmental conditions, will be modified. Absent the impoundment, habitat for large bodied warm water game fish will be reduced. Non-native species, such as carp and native species that are indicative of poor water quality and degraded habits, such as bullhead and green sunfish, will become less common as conditions improve for desirable stream species. A free-flowing stream habitat more conducive to a cool or cold water fish and aquatic life community will be re-established, including the potential establishment of a recreational trout fishery.

If the dam is removed, large bodied fish may be stranded in shallow water or the scour hole below the dam. Large bodied game fish will be removed and transported to Little or Big Cedar Lake. Because of the large numbers of carp present in the impoundment, no attempt will be made to recover stranded carp. As a result, a number of carp will perish. Small-bodied panfish and forage fish, including lake chubsucker, will be able to move downstream or upstream of the former dam and impoundment site. The dam breach will occur over a number of days to reduce the number of stranded fish.

If the dam is removed, it will no longer serve as a carp nursery for the system or as a source for Eurasian watermilfoil. A higher quality nine-acre wetland area, including the potential to expand a rare calcareous fen and a free-flowing cool or cold water stream will replace the eutrophic impoundment.

The off-line replacement and operation of the residential heat pump and cooling tubes pond will not have any deleterious impacts on local or downstream fish and aquatic life communities. The pond will be designed and landscaped with native vegetation to provide wildlife habitat amenities. The pond will off set some of the wildlife habitat formerly associated with the impoundment.

4.1.2 Habitat Impacts

If the dam is removed, physical habitat will improve in the former impoundment as silt is scoured from the historic rock-riffle substrates. Increasing in the amount of coarse substrate will benefit macroinvetebrate species diversity and biomass. The thermal impacts of the impoundment will be eliminated. As a result, water temperatures within and downstream of the former dam and impoundment will be similar to water temperatures upstream of the impoundment.

This alternative would allow the opportunity to restore up to nine acres of wetland formerly inundated by the impoundment.

Following the initial breach of the dam, an unknown amount of non-cohesive sediment will be lost from behind the impoundment and dam sill. As a result, turbidity levels will increase initially and then return to ambient conditions. Attempts will be made to capture coarse sediment in the scour hole located below the dam.

This alternative reduces water surface area by approximately 9 acres. This would reduce the amount of loafing habitat and open water for a variety of waterfowl and waterbirds. However, most of these species are expected to continue to use the river if the dam is removed. Of those species most potentially effected, the diving ducks or those that require large stretches of open water, would likely use suitable loafing sites elsewhere in the area, most notably the Big and Little Cedar lakes, Hasmer and Tilly Lakes, and several smaller ponds located within 2 to 3 miles from the project area. The proposed replacement pond will also provide some of these habitats.

As a result of dam removal and site restoration, habitat conditions would be expected to improve for common bird species in the area. Following restoration, suitable grass/forb or grass/shrub cover types would attract and provide feeding habitat for raptors. Edge species such as house wrens, gray catbirds, and American goldfinches would use the riparian cover for nesting and feeding sites. Nesting habitat and foraging perches would improve for riparian warblers, notably the yellow warbler and the common yellow throat. Ground nesting waterfowl, such as the blue-winged teal and mallard, would also use established grassy areas as secure nest cover.

The increased use by birds would also attract raptorial and mammalian predators, such as the great-horned owl, American kestrel, red-tailed hawk, and the red fox. Feeding habitat for birds using the adjacent wooded uplands would improve. Many of the summer residents would consume the seeds and insects produced in the riparian vegetation.

Bird watching opportunities would increase with the influx of species adaptable to newly established riparian vegetation on the mud flats. Viewing opportunities would increase as the vegetation matures and attracts migratory and summer resident birds. Local citizens who winter feed birds may note an increase in bird diversity at their feeding stations. Songbirds attracted to the corridor are usually opportunistic, seeking available food sources and alternative feeding sites during periods of harsh winter weather.

No mammals are expected to be displaced as a result of full dam removal. Most of the mammals are terrestrial; therefore any addition of terrestrial habitat would improve cover for these species. The continued presence of riverine habitat would attract species such as the little brown bat (an aerial insectivore), raccoon, mink and muskrat. Exposed sediment stabilization and revegetation would benefit many of the common mammalian species. Common species expected to benefit include: opossum, shrews, mice, voles, Eastern cottontail rabbit, red fox, coyote, and white-tailed deer. Although these species expanded their territories into the floodplain after the drawdown, their origin was most likely the adjacent wooded uplands.

Ultimately revegetation of the exposed sediment will improve habitat conditions for these mammals. Feeding/foraging sites would increase. Loafing sites and escape cover would also improve in the shrubby growth of the mud flats. As a result, populations of certain species may increase.

Under this alternative, no change in amphibian diversity is expected. The exposed and stabilized mud flats would provide suitable feeding sites and nesting cover for beneficial snakes, such as the garter snake. Snake abundance is expected to increase as the riparian habitat matures and produces suitable prey such as small frogs, insects, mice, and snails. Turtle numbers are not expected to noticeably change. Exposed mud flats will be used as basking sites or egg-laying habitat for snapping turtles and painted turtles.

4.1.3 Listed, Proposed and Candidate Species

There are no federal or state listed, proposed or candidate species located in the project area or that would otherwise be affected by this project.

The state listed Special Concern species, the lake chubsucker, is resident to the Schweitzer impoundment. Removal of the dam and impoundment will cause many resident fish to become dislocated. Small-bodied fish such as the lake chubsucker will likely be re-located downstream of the dam to deeper, low-gradient reaches of Cedar Creek. Their populations are known to occur elsewhere in the Cedar Creek watershed including Big and Little Cedar Lakes, Tilly Lake, Hasmer Lake and Cedar Creek (Fago, 1984 and Nelson, pers. comm.). Their abundance in the state appears to be stable (Lyons, 2000).

The ohio goldenrod, *Solidago ohioensis* is a state listed Special Concern species and the plant is located in a calcareous fen community located adjacent to the impoundment. A calcareous fen is a regionally rare, open wetland found in southern Wisconsin, often underlain by a calcareous substrate marl, through which percolates carbonate-rich groundwater percolates. The flora is typically diverse, with many calciphiles or calcium-loving plants. Calcareous fens and the wetland plants they support are especially sensitive to the quality and depth of groundwater that supports them. As such, locally fluctuating surface water levels may disturb the groundwater sources that support these wetlands. However, removal of the dam and resulting impoundment should not negatively impact this plant species or the calcareous fen that supports it. Prior to and following the initial 2-foot drawdown of the impoundment during July 2000, groundwater effecting the fen was observed discharging well

up gradient of the impoundment surface water and upper bank. Furthermore, removal of the dam and impoundment may actually benefit the ohio goldenrod and the calcareous fen community by expanding the available adjoining habitat previously inundated by the impoundment. Removing the dam and impoundment will not cause the fen to be impacted by non-native invasive species.

4.1.4 Cultural and Paleontological Resources

There are no historical or archeologically significant properties in the project area (Appendix 5 and 6).

4.1.5 Land Use and Ownership Issues

Selection of this alternative will not impact the surrounding land use and land values. The project will result in the elimination of a 9.75-acre impoundment that will be replaced with a free-flowing stream and 9 acres of wetland. Both impacted landowners riparian to the impoundment, the state of Wisconsin and private landowner, support the dam removal option. The exposed sediment will be enhanced as a wetland community. The newly created wetland will be managed in native plant species.

The land currently flooded by the impoundment is owned by two entities: the State of Wisconsin, and one private landowner. The only private holding is on the northeast side of the current impoundment. A memorandum of understanding has been signed between the Department and the private landowner. The purpose of this agreement is to allow the state and its contractor(s) access to the private lands for purposes of pond construction and dam demolition, should the dam be removed.

Removal of the dam and resulting impoundment would eliminate the liabilities associated with dam ownership and operation, and the replacement pond will insure that the residential heat pump system continues to operate efficiently and maintains its value to the owner.

Some areas affected by the dam and impoundment will change. The river channel will be narrower upstream of the dam, and over time, will be similar to channel conditions that exist upstream and downstream of the dam and impoundment. Removal of the dam will not have any noticeable effect on flood levels upstream or downstream of the former dam during major floods. The Schweitzer dam was not a flood control dam and has operated as a run of the river facility. Therefore the floodplain downstream of the dam will not be affected and there should be no impact on downstream flooding. In future flood events without the dam in place, the floodplain in the former impoundment will be reduced in size.

The aesthetic qualities formerly associated with the impoundment would be replaced with those of a wetland landscape and free-flowing stream. Recreational boating would be limited to using a canoe or other shallow drafting watercraft during higher stream flow periods.

The parcel will be managed as a natural area. No active forms of recreational facilities will be developed.

4.1.6 Risks and Unknowns (WEPA Component)

Consistent with the requirements set forth in WEPA; there are no unknowns associated with this project. The results of dam removals are predictable. Hydrology and stream morphology will eventually reflect pre-dam conditions. Kanehl (et al. 1997) described the enhanced fish community and habitat response to a similar dam removal in the Milwaukee River Basin. Hundreds of dams have been removed in the State of Wisconsin within the regulatory guidelines in Chapter 31 of the Wisconsin Statutes.

4.1.7 Precedents (WEPA Component)

This action is not considered to be precedent setting. Similar to previous dam removal projects in the state, removal of this dam will further demonstrate there are alternatives to repair and maintenance of aging dam structures and that dam removal can improve water quality, aquatic and terrestrial habitat, enhance native biological communities, restore natural water and landscapes, and protect public rights in navigable waters.

The activities proposed to occur under this alternative do not conflict with the plans, rules or policy of local, state or federal agency. The proposed dam removal is consistent with recommendations contained in two previously adopted plans for managing the surface water resources of the Milwaukee River Basin (WDNR, 1990 and 1995). These plans recognize that dam removal is a sound practice for restoring the environmental integrity of riverine systems. To date, 10 of the previous 52 authorized dams located in the Milwaukee River Basin have been formally abandoned.

4.1.8 Cumulative Impacts

The cumulative impacts associated with this dam removal alternative are generally viewed as being positive. Removing the Schweitzer dam would eliminate the last of five dams which served as fish migration and navigation hazard along the upper 25-miles of Cedar Creek, extending from the outlet of Little Cedar Lake (river mile 30) to the Cedarburg Pond dam in the city of Cedarburg (river mile 5). The historical cumulative thermal impacts of these dams would be eliminated. Removal of the Schweitzer dam would not be expected to increase the range of non-native fish or other aquatic life already established in the Milwaukee River and Lake Michigan basins. Four dams would remain on Cedar Creek between Cedarburg's Cedarburg Pond dam (river mile 5) and Cedar Creek's confluence with the Milwaukee River (river mile 0). These structures would remain a barrier to fish migration and a navigation hazard. The owners of these remaining dams have not expressed an interest in abandoning these dams.

4.2 Alternative B (No Action) - Repair the Dam and Leave the Existing Impoundment In Place

4.2.1 Biological Impacts

Continued maintenance of the dam and impoundment would have a long-term series of negative environmental consequences. The dam structure would continue to be a complete and last remaining barrier to fish passage in the upper Cedar Creek watershed. Fish populations would remain fragmented by the dam and the genetic health and diversity of fish species would remain compromised.

Under this alternative, the dam would maintain a shallow and warm pool of water dominated by heavy submerged plant growth and generally poor aquatic habitat quality. The potential to create a recreational trout fishery would not exist. Eurasian watermilfoil would persist and carp would remain the dominant fishery. Both would proliferate and would remain a continuing local source and for downstream reaches.

Although the impoundment habitat would remain habitat limited, retaining the impoundment would provide adequate depths to maintain a limited game fish population dominated by largemouth bass and some northern pike. Wildlife habitat currently served by the impoundment would be retained. Consistent with the objectives of this project to enhance or restore the natural values of the Cedar Creek watershed, there would be no opportunity to restore up to nine acres of wetland including expansion of a rare calcareous fen.

4.2.2 Habitat Impacts

Following this alternative, water temperatures would continue to exceed the 22 ^{0}C MDM criteria for a cold water fish and aquatic life community. The potential to create a recreational trout fishery would not exist. Overall habitat would remain conducive to fish and other aquatic life tolerant of degraded environmental conditions. Water depths and overall habitat quality would be expected to decrease over time as the accumulation of sediment from upstream sources as well as the accumulation of decomposing plant material will continue.

There would be no dam breach related loss of sediment from behind the impoundment. The opportunity to restore up to nine acres of historical wetland and associated wildlife habitat would not exist under this alternative.

Dam retention would maintain existing water surface levels, slow water velocity, and continue to inundate potentially restorable wetlands.

Dam retention would maintain the large, open slack-water area favored as loafing sites by waterfowl and other water birds. Swallows would continue to use the open water of the corridor as hunting areas for insects. Kingfishers would utilize the overhanging tree limbs as hunting perches.

Maintaining the existing dam and impoundment would prohibit the restoration of the historical floodplain wetland habitat for many of the areas most common bird species. Less common species, notably the migratory warblers, would not benefit by maintaining the habitat created by the current dam and resulting impoundment.

Maintaining the existing pond and dam would not increase bird watching opportunities, as no new attractive cover for bird use would be created.

Under this alternative, habitat for the most common mammal species would be maintained at current levels. These species would not be displaced from the corridor since all except the muskrat would use the adjacent wooded bluffs for cover.

The herpetile community is not expected to appreciably change under this alternative. Amphibians would continue to use the placid backwater areas for breeding, tadpole development and for feeding areas. No additional Garter snake habitat would be created under this alternative. Snakes would seek cover in the adjacent wooded bluffs. Nest sites for turtles would continue to be limited to the dry uplands along the bluffs that surround the pond. The number of turtle basking sites would be unchanged.

4.2.3 Listed, Proposed and Candidate Species

There are no federal or state listed, proposed or candidate species located in the project area or that would otherwise be affected by this alternative.

The state listed Special Concern species, the lake chubsucker, is resident to the Schweitzer impoundment. Maintenance of the dam and impoundment will not cause any impact to this species.

The ohio goldenrod and calcareous fen located adjacent to the impoundment should not be negatively impacted by maintaining the current dam and impoundment. As described previously for Alternative A, groundwater was observed to be discharging from the fen well up gradient of the impoundment prior to and following the initial 2-foot drawdown. Maintaining the dam and impoundment will not likely result in any natural expansion of the ohio goldenrod or calcareous fen community. Maintaining the dam and impoundment will not cause the fen to be impacted by non-native invasive species.

4.2.4 Cultural and Paleontological Resources

There are no historical or archeologically significant properties in the project area (Appendix 5 and 6).

4.2.5 Land Use and Ownership Issues

Selection of this alternative will not impact the current use of the impoundment or the surrounding land use and land values. The 9.75-acre impoundment will be maintained. No new or enhanced wetlands would be created.

Implementing this alternative would permit continued use of the remaining pond to operate the residential heat pump system. The maintenance and operation of the heat pump system does not negatively impact fish, aquatic life or wildlife populations or their habitat.

The aesthetic qualities associated with the impoundment would remain. Recreational boating would be possible with small watercraft. Boating, especially motorized forms, would be difficult during the summer peak Eurasian watermilfoil growing season.

Following this alternative, the Department would be required to maintain and operate the Schweitzer dam. Funding for operation and future maintenance is not available as the Department purchased this facility with the intent for abandoning and removing the structure. This alternative would not require the construction of a

replacement pond, and as such, would not result in any additional costs to the Department or the residential heat pump owner.

The activities proposed to occur under this alternative do not conflict with the plans, rules or policy of local or federal agency. However, maintenance of the existing dam and impoundment is not consistent with recommendations contained in two previously adopted plans for managing the surface water resources of the Milwaukee River Basin (WDNR, 1990 and 1995). These plans recognize that dam removal is a sound practice for restoring the environmental integrity of riverine systems. To date, 10 of the previous 52 dams located in the Milwaukee River Basin have been abandoned. The parcel will be managed as a natural area. No active forms of recreational facilities will be developed.

4.1.9 Risks and Unknowns (WEPA Component)

There are no unknowns associated with this alternative. The negative environmental consequences of dams on riverine systems are well understood. The specific impacts attendant to the Schweitzer dam and impoundment have been described earlier. Maintenance of the dam and impoundment would cause these impacts to persist indefinitely.

4.1.10 Precedent (WEPA Component)

Consistent with WEPA requirements, this action is not precedent setting. Numerous dams are maintained and operated throughout the state for a variety of management reasons. The activities proposed to occur under this alternative do not conflict with the plans, rules or policy of local or federal agencies provided the dam structure is properly maintained. However, maintaining the dam is inconsistent with recommendations contained in two previously adopted state plans for managing the surface water resources of the Milwaukee River Basin (WDNR, 1990 and 1995). These plans recognize that dams have negative environmental impacts, and conversely, dam removal is a sound practice for restoring the environmental integrity of riverine systems.

4.2.6 Cumulative Impacts

Following this alternative would result in the maintenance of the last remaining fish migration barrier and navigation hazard in the upper Cedar Creek watershed. The Schweitzer dam would remain as the last of five dams which served as fish migration and navigation hazard along the upper 25-miles of Cedar Creek, extending from the outlet of Little Cedar Lake (river mile 30) to the Cedarburg Pond dam in the city of Cedarburg (river mile 5). The thermal impact of this dam would remain. Four dams would remain on Cedar Creek between Cedarburg's Cedarburg Pond dam (river mile 5) and Cedar Creek's confluence with the Milwaukee River (river mile 0). These structures would remain a barrier to fish migration and a navigation hazard.

4.3 Alternative C – Maintain Dam and Enhance Impoundment by Dredging

4.3.1 Biological Impacts

Similar to Alternative B above, continued maintenance of the dam and impoundment would have a long-term series of negative environmental consequences. However, in the short-term some of the environmental consequences associated with the dam and resulting impoundment could be partially mitigated by dredging.

Following this alternative, the dam structure would continue to be a complete and the last remaining barrier to fish passage in the upper Cedar Creek watershed. Fish populations would remain fragmented by the dam and the genetic health and diversity of fish species would remain compromised. The dam would maintain a warm pool of water dominated by heavy submerged plant growth and generally poor aquatic habitat quality. Water temperatures would still exceed the 22 ^{0}C MDM criteria for a cold water fish and aquatic life community. The potential to create a recreational trout fishery in Cedar Creek would not exist. Eurasian watermilfoil would persist but perhaps at reduced levels provided dredging was sufficiently deep and absent continuing sedimentation, the benefits might be more than short-term. Carp would remain the dominant fishery. Both carp

and watermilfoil would proliferate and would remain a continuing source for downstream reaches. Overall habitat would remain conducive to fish and other aquatic life tolerant of degraded environmental conditions.

4.3.2 Habitat Impacts

Although the impoundment habitat would remain limited, retaining the impoundment would provide adequate depths to maintain a limited game fish population dominated by largemouth bass and some northern pike. Wildlife habitat currently served by the impoundment would be retained. However, there would be no opportunity to restore up to nine acres of wetland including expansion of a rare calcareous fen.

Despite the increased depth of the pond from dredging, the resulting depth would not be sufficient to cause the pond to thermally stratify. Therefore there would not be an opportunity to create cold water conditions downstream from a hypolimnetic bottom draw discharge from the dam. Despite any benefits that dredging might provide for water quality and habitat, the benefits would be temporary, as the pond would continue to settle material from upstream sources. While some habitat features would improve following the expected reduction in Eurasian watermilfoil growth, common carp would continue to dominate the fishery. Dredging the pond may actually exacerbate the existing watermilfoil infestation by fragmenting plants and causing them to take root.

There exist potential impacts associated with the activity of dredging; dredge spoil transport and disposal. Hydraulic or mechanical dredging would result in the physical disruption of benthic habitat and re-suspension of sediment. The effects of re-suspended sediment could be mitigated through the use of turbidity barriers. The potential impacts of dredge spoil transport and disposal would depend on the dredging method, proximity of the disposal site, disposal site conditions and value, and the potential to manage or otherwise dispose of dredge spoil return water.

Under this alternative, impacts to wildlife and their habitat would be very similar to those previously described in section 4.2.2 Habitat Impacts – No Action Alternative.

4.3.3 Cultural and Paleontological Resources

There are no historical or archeologically significant properties in the project area (Appendix 5 and 6).

4.3.4 Listed, Proposed and Candidate Species

There are no federal or state listed, proposed or candidate species located in the project area or that would otherwise be affected by this alternative.

The state listed Special Concern species, the lake chubsucker, is resident to the Schweitzer impoundment. Maintenance of the dam and impoundment will not cause any long-term impact to this species. However, dredging operations would likely cause a short-term increase in the re-suspension of sediment, increased turbidity and a direct disruption of their associated benthic habitat.

The ohio goldenrod and calcareous fen located adjacent to the impoundment should not be negatively impacted by maintaining the current dam and impoundment. As described previously for Alternatives A and B, groundwater was observed to be discharging from the fen well up gradient of the impoundment prior to and following the initial 2-foot drawdown. Maintaining the dam and impoundment will not likely result in any natural expansion of the ohio goldenrod or calcareous fen community, nor would this alternative be expected to cause the fen to be impacted by non-native invasive species.

Potential impacts to the ohio goldenrod and calcareous fen might be reduced or eliminated by extending a “no dredge” zone adjacent to the fen.

4.3.5 Land Use and Land Value

Selection of this alternative will not impact the current use of the impoundment or the surrounding land use and land values. The 9.75-acre impoundment will be maintained. No new or enhanced wetlands would be created.

This alternative would permit continued use of the remaining pond to operate the residential heat pump system. The maintenance and operation of the heat pump system does not negatively impact fish, aquatic life or wildlife populations or their habitat.

The aesthetic qualities associated with the impoundment would remain. Recreational boating would be possible with small watercraft and might actually be enhanced in the short-term with the added depth and reduction in Eurasian watermilfoil.

Following this alternative, the Department would be required to maintain and operate the Schweitzer dam. One of the reasons the Department purchased these lands and infrastructure included the desire that the dam be removed, and the stream and lands restored to their historical biological use and values. In addition, the costs attendant to implementing this alternative would be a drain on existing Department resources. Dredging the pond may cost in excess of $1 million. This alternative would not require the construction of a replacement pond, and as such, would not result in any additional costs to the Department or the residential heat pump owner.

The activities proposed to occur under this alternative do not conflict with the plans, rules or policy of local or federal agency. However, maintenance of the existing dam and impoundment is not consistent with recommendations contained in two previously adopted state plans for managing the surface water resources of the Milwaukee River Basin (WDNR, 1990 and 1995). These plans recognize that dam removal is a sound practice for restoring the environmental integrity of riverine systems. To date, 10 of the previous 52 dams located in the Milwaukee River Basin have been abandoned.

4.1.11 Risks and Unknowns (WEPA Component)

There are no unknowns associated with this alternative. The negative environmental consequences of dams on riverine systems and management of small impoundments through dredging are well understood. The specific impacts attendant to the Schweitzer dam and impoundment have been described earlier. Maintenance of the dam and impoundment would cause these impacts to persist indefinitely.

4.1.12 Precedent (WEPA Component)

Consistent with WEPA requirements, this action is not precedent setting. Numerous dams are maintained and operated throughout the state for a variety of management reasons. The activities proposed to occur under this alternative do not conflict with the plans, rules or policy of local or federal agencies provided the dam structure is properly maintained. However, maintaining the dam is inconsistent with recommendations contained in two previously adopted state plans for managing the surface water resources of the Milwaukee River Basin (WDNR, 1990 and 1995). These plans recognize that dams have negative environmental impacts, and conversely, dam removal is a sound practice for restoring the environmental integrity of riverine systems.

4.3.6 Cumulative Impacts

Following this alternative would result in the maintenance of the last remaining fish migration barrier and navigation hazard in the upper Cedar Creek watershed. The Schweitzer dam would remain as the last of five dams which served as fish migration and navigation hazard along the upper 25-miles of Cedar Creek, extending from the outlet of Little Cedar Lake (river mile 30) to the Cedarburg Pond dam in the city of Cedarburg (river mile 5). The thermal impact of this dam would remain and may actually be enhanced as a result of the greater volume of the pond following dredging. Four dams would remain on Cedar Creek between Cedarburg's Cedarburg Pond dam (river mile 5) and Cedar Creek's confluence with the Milwaukee River (river mile 0). These structures would remain a barrier to fish migration and a navigation hazard.

4.4 Environmental Justice (Impact Common to All Alternatives)

None of the alternatives will have a negative impact on the human environment. None of the alternatives will have a negative impact on a minority population or ethnic group. None of the alternatives will negatively impact the economically disadvantaged.

4.5 Summary of Environmental Consequences of Alternatives

The following table briefly summarizes the environmental consequences of the alternatives carried forward for more detailed analysis:

Table 2: Comparison of Environmental Consequences of the Alternatives

Condition/Alternative	**Alternative A - (Proposed Action) Remove Dam, Restore Creek Channel and Create Off-Line Replacement Pond**	**Alternative B - (No Action) Repair and Operate Dam**	**Alternative C - Maintain Dam and Enhance Impoundment by Dredging**
Biological	Removes last barrier to fish migration in upper reaches of Cedar Creek watershed. Enhances or restores cool or cold water fish and aquatic life community, reduced habitat for large bodied warm water fish. Reduce or eliminate habitat for non-native Eurasian watermilfoil and carp. Nuisance amounts of Eurasian watermilfoil will be replaced with native wetland landscape.	Last barrier to fish migration in upper reaches of Cedar Creek watershed remains. Unable to enhance or restore cool or cold water fish and aquatic life community, maintain habitat for limited population of large bodied warm water fish. Preferred habitat for nonnative Eurasian watermilfoil and carp will remain. Nuisance amounts of Eurasian watermilfoil will remain.	Last barrier to fish migration in upper reaches of Cedar Creek watershed remains. Unable to enhance or restore cool or cold water fish and aquatic life community, possibly enhance habitat for limited population of large bodied warm water fish. Preferred habitat for nonnative Eurasian watermilfoil and carp will remain but may be slightly reduced, in the short-term, through dredging.
Habitat	Impoundment impacts on local and downstream water temperature are eliminated. Restore wetland including potential expansion of a rare calcareous fen, and an increase in the amount and diversity of wetland habitat for wildlife.	Impoundment impacts on local and downstream water temperature remain. No opportunity to restore wetland or expand rare calcareous fen, and no additional wetland habitat for wildlife.	Impoundment impacts on local and downstream water temperature remain. No opportunity to restore wetland or rare calcareous fen, and no additional wetland habitat for wildlife.

(continued) **Condition/Alternative**	**Alternative A - (Proposed Action) Remove Dam, Restore Creek Channel and Create Off-Line Replacement Pond** Reduction in the available habitat for game fish species (e.g. northern pike and largemouth bass) with an opportunity to restore cold water trout fishery. Downstream increase in susp. solids & turbidity during dam breach.	**Alternative B - (No Action) Repair and Operate Dam** Maintain available habitat for limited game fish species (e.g. northern pike and largemouth bass) and no opportunity to restore cold water trout fishery. No change in existing local or downstream-suspended solids or turbidity levels.	**Alternative C - Maintain Dam and Enhance Impoundment by Dredging** Maintain available habitat for limited game fish species (e.g. northern pike and largemouth bass) and no opportunity to restore cold water trout fishery. Potential increases in local and downstream-suspended solids and turbidity during dredging.
Listed, Proposed, and Candidate Species	No impact to federal or state listed endangered or threatened resources. No impact to rare calcareous fen and state Special Concern ohio goldenrod. Opportunity to expand calcareous fen and ohio goldenrod habitat exists on reclaimed sediment. Reduction in preferred habitat for the state Special Concern lake chubsucker which prefers lake and low-gradient streams. Population is secure in other waterbodies in the watershed.	No impact to federal or state listed endangered or threatened resources. No impact to rare calcareous fen and state Special Concern ohio goldenrod. No opportunity to expand calcareous fen and ohio goldenrod. No reduction in preferred habitat for the state Special Concern lake chubsucker which prefers lake and low-gradient streams. Population is secure in other waterbodies in the watershed.	No impact to federal or state listed endangered or threatened resources. No impact to rare calcareous fen and state Special Concern ohio goldenrod. No opportunity to expand calcareous fen and ohio goldenrod. No reduction in preferred habitat for the state Special Concern lake chubsucker. Potential for habitat impacts during dredging. Population is secure in other waterbodies in the watershed.
Cultural and Paleontological Resources	No impacts	No impacts	No impacts
Land Use and Values	Aesthetic values associated with reflecting pool are replaced with stream and undeveloped corridor, and the small replacement pond will provide some values formerly associated with impoundment	Aesthetic values associated with reflecting pool are maintained.	Aesthetic values associated with reflecting pool are maintained and in the short-term, enhanced through dredging.

(continued) **Condition/Alternative**	**Alternative A - (Proposed Action) Remove Dam, Restore Creek Channel and Create Off-Line Replacement Pond**	**Alternative B - (No Action) Repair and Operate Dam**	**Alternative C - Maintain Dam and Enhance Impoundment by Dredging**
	Value and function of residential heat pump system is maintained by replacement pond.	Value and function of residential heat pump system is maintained	Value and function of residential heat pump system is maintained
	Nuisance levels of Eurasian watermilfoil replaced with native wetland landscape.	Nuisance levels of Eurasian watermilfoil would remain.	Nuisance levels of Eurasian watermilfoil remains but at a reduced rate following dredging.
	Liabilities associated with dam ownership are eliminated.	Liabilities associated with dam ownership persist.	Liabilities associated with dam ownership persist.
Environmental Justice	No impacts	No impacts	No impacts
Risks and Unknowns	None	None	None
Precedents	No conflicts with plans, rules or policy of local, state or federal agencies. Dam removal is consistent with two previously adopted water resource management plans.	No conflicts with rules or policy of local or federal agencies. Dam retention is not consistent with two previously adopted water resource management plans.	No conflicts with rules or policy of local or federal agencies. Dam retention is not consistent with two previously adopted water resource management plans.

5 List of Prepares

Will Wawrzyn, Co-Author, WDNR, Fisheries Biologist

Steve Westenbroek, Co-Author, WDNR, Environmental Engineer

Joanne Kline, WEPA Compliance/Endangered Resources, WDNR, Wetland Ecologist

Tom Issac, Reviewer, Wildlife Biologist, WDNR

Mike Bruch, Reviewer, WDNR, Dam and Water Resources Engineer

Ben Callan, Permit Issues/Compliance, WDNR, Water Management Specialist

Victoria Durst, Archeological and Historical Review, WDNR Facilities and Lands

6 Consultation and Coordination with the Public and Others

The Department published a news release on November 14, 2001 announcing the proposed project and actions (Appendix 7). A list of the media outlets provided a copy of the news release is contained in Appendix 8. The purpose of the news release was to inform the public as to the intent of the project and to invite public input as to the scope of the EA. USFWS and Department contacts were included in the release. The release was sent via fax to a wide range of local and statewide public and private electronic and print media, in addition to interested organizations. A Fact Sheet describing the project was also made available upon request (Appendix 9). No formal written comments were received during the 30+-day comment period. However, the Department did receive one voice mail message proposing that the dam be maintained and the pond dredged to increase water depth and improve fishing. In response, the Department evaluated this alternative **as Alternative C – Maintain Dam and Enhance Impoundment by Dredging**.

The Department and the only other private landowner riparian to the project area have agreed to the responsibilities of each party regarding access and cooling pond replacement. The private landowner supports the dam removal Alternative A action.

Letters were sent to the State Historic Preservation Officer (SHPO) and three Tribal Historic Preservation Officers (THPO). Letters were received back from the SHPO and one of three THPOs stating that there were no archeological or architectural significant properties located in the project area (Appendix 5 and 6). Two of the three letters sent to THPOs have not been returned during the 30-day review period. As such, we assume these offices have not identified any significant archeological or architectural properties in the project area.

Following review of the draft EA document by USFWS and Department staff, comments and revisions were incorporated as appropriate. The Department will apply for a dam abandonment permit and 30-day Type 2 public notice and news release will be prepared. The EA was made available at a variety of local outlets including but not limited to local unit of governments and public libraries. Following the 30-day review period, the Department and the USFWS reviewed the public comments and finalized the EA.

7 Public Comments on Draft EA and Agency Response

The purpose of this section is to document and respond to public comments received during the draft EA public review period. The Service issued a public notice on July 30, 2002 http://midwest.fws.gov/News/Release02-49.html. In addition, the Department issued a news release informing the public about the project and the opportunity to provide the Department and Service comments on the draft EA. A copy of the news release is provided as Appendix 10.

The Department received one written comment on the draft EA during the 30-day public review period that ended on August 6, 2002. A copy of the written comment is provided as Appendix 11. The individual generally supports the recommendation to remove the dam and restore the stream. However, they were concerned about the number of carp present in the Schweitzer impoundment and the negative impacts they might have on Cedar Creek should they be released from the Schweitzer impoundment when the dam is removed.

The author of the EA spoke with the individual on August 1, 2002 and informed them the Departments will attempt to capture as many as possible of the large bodied fish that will be released during demolition of the dam. The Department would make this commitment despite the fact that carp are already present in downstream reaches of Cedar Creek. A small mesh "minnow" seine will be set between the banks at the downstream side of the large scour pool formed below the dam spillway. The remaining water in the impoundment will be released slowly by making small notches in the dam weir. Fish trapped in the scour pool will be captured using additional seines and electrofishing gear. Carp, and all other non-native fish encountered, will be destroyed and buried on site. Large bodied game fish will be transported and released in Little Cedar Lake or Big Cedar Lake located a few miles upstream in the watershed. Native small bodied forage and panfish will be allowed to continue downstream of the barrier seine. Following our discussion, the individual indicated she was satisfied and supportive of this effort.

8 References Cited

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9 List of Appendices

Appendix 1: Native seed mixture and plant list for the Schweitzer Dam Removal project.

Appendix 2: Authorities and approvals for proposed action Alternative A.

Appendix 3: Fish distribution for Cedar Creek in the vicinity of the Schweitzer Dam and impoundment.

Appendix 4: Natural Heritage Inventory (NHI) assessment for the Schweitzer Dam Removal project.

Appendix 5: Correspondence from State Historical Protection Office regarding the Schweitzer Dam Removal project.

Appendix 6: Correspondence from the Tribal Historic Protection Office regarding the Schweitzer Dam Removal project.

Appendix 7: News release announcing the Schweitzer Dam Removal project and media outlets.

Appendix 8: Media outlets provided news release.

Appendix 9: Fact Sheet for the Schweitzer Dam Removal Project.

Appendix 10. News release issued by the Wisconsin Department of Natural Resources, July 11, 2002.

Appendix 11. Written comment received on draft version of environmental assessment, July 30, 2002